3: Robequain--113-116 S-5 (no date) 1944 Laotians-1-5
116, 133, 503, 505, 177.50 France
636.50

"The Mekong appeared to offer a splendid means of penetrating the plateaus and mountains of Laos. At one time it was even suggested that Saigon could be one of the great ports for Southern China. As early as 1866, the Doudart de Lagrée and Francis Garnier mission realized the difficulties[114]of navigating the river above Kratié. This large river, as a matter of fact, is still very young as far as physical geography is concerned, or rather, a series of recent and still only partially explained tectonic episodes have renewed its youth. It consists of a chain of calm-surfaced reaches, separated by rapids or falls. The chief obstacle to navigation is at Khône where the arms of the river, spread out over an area several kilometers wide, drop 15 meters through torrential and rock-studded channles or cataracts. Here precisely is the border between Cambodia and Laos. Other rapids are scattered both up and down stream, making navigation by launch difficult and uncertain throughout entire sections between Kratié and Savannakhet. It is only at Savannakhet ('the gateway to paradise') that the great navigable reaches begin which permit launches to sail as far as several kilometers above Vientiane without breaking bulk.

Europeans were eager to tame the Mekong. As early as 1890 the Messageries

Fluviales de Cochinchine had organized a steamship line which, with the help of some trans-shipment, operated as far as Khône. For more than two years the launch, Argus, tried to get past the Khône barrier through the channels which canoes sometimes used in descending the river. In view of the failure of these attempts, a narrow guage railway was built across Khône Island, and by this means gunboats and then launches were carried to the upper river in 1893.

Conditions of navigation have been improved since then, but scouring the river channels has not always produced the desired results, since the river's reactions are difficult to predict; buoying had been improved up to 1925; more than a thousand towers, buoys and landmarks had been built. Hundred-ton launches, drawing one and one half meters, can reach as far as Khône, at high water, about three months a year; in other months, the section between Kratié and Khône, much of which had to be traversed by canoe up to 1900, can now be covered, with only one trans-shipment, by a short thirty-ton launch which can manage the sharp turns of the narrow channels. Above Khône, the most difficult passage is through the sandstone canyon of Kemmarat, where the river attains [115] a depth of eighteen meters during the heavy floods and the current in some rapids is from nine to ten knots. Since 1910 more powerful launches have been put into service, and were later supplied with semi-Diesel engines; they have gradually reduced the number of changes but the Keng Sa rapids are still impassable at low water

and necessitate trans-shipments to motor-canoes.

In 1895 a small gunboat, the Lagrandière, went up above the Savannakhet-Vientiane reaches to within 50 kilometers of the Yunnan frontier, about 2,500 kilometers from the sea and 400 meters above sea-level; this was a purely sporting exploit. Since then other steamboats have gone up as far as Luang Prabang, but it was realized that regular traffic could not be maintained through one section, dotted with dangerous rapids. Nevertheless, the trip between the two Laotian capitals previously made by native canoes plying upstream, and by rafts going downstream, has been very much speeded up since 1930 by the use of motor canoes.

In brief, progress is summed up in the following figures; in 1900, at low water, it took 65 days or more to go from Saigon to Luang Prabang; in 1909 the time was reduced to a maximum of 50 days; in 1937 the upstream trip took 37 days, downstream 27; and at high water, it took 27 or 22 days, respectively.

In spite of all this, French Upper Laos is still farther from Saigon by water than Saigon is from Marseille. Even below Vientiane in Lower Laos, the transport capacity of the Mekong depends on the obstacles encountered between Savannakhet and Khône. It is difficult to cut down the present length of the time needed for the journey: the narrowness of the channels and the limited power of the engines which can negotiate them do not

permit increasing the useful cargo beyond 100 tons. At low water, trans-shipment is a heavy burden on shipping. In 1936 only 4,644 tons of freight passed the port of Khone going downstream (10) and 5,286 tons upstream.

10. Excluding teak logs which are floated down the river.

Thus the high hopes for the Mekong as a means of transportation have been dashed. Experts believe that if additional improvements could increase the traffic to 25,000 tons a year, [116] this is a maximum which would be hard to surpass. Railways and highways will therefore have to furnish transportation which will be justified in the future by our reasonable expectations for an enlarged Laotian economy, if not by its extent at present. (11)

11. The arguments in favor of the water route are set forth by Colonel Bernard in the Bulletin du Comité de l'Indochine, February 20, 1936. Navigation on the Mekong has undergone great changes since the end of 1937, at the expiration of the contract of the Campagnie Saigonnaise de Navigation et de Transports, which had replaced the Messageries Fluviales. Steam launches no longer negotiate the Kemmarat narrows;

there is no longer a regular service between Paksé and Savannakhet. From Savannakhet to Vientiane service is now assured by a company employing flat-bottomed barges and from Vientiane to Luang Prabang and Xieng Sen by motor canoes."

10: d'Orleans--289 T-3 (1891-92) 1894 Laos
116, 133, 361, 501

[LSS: near Luang Prabang] "The river is 300 or 400 yards wide; the banks are steep but low, the villages are numerous and always surrounded by small woods, while sea gulls wheel and cry over our heads. Our boats travel slowly; the men have fastened the two pirogues side by side, and like our boys they are busy washing and dressing before they enter the city. At four o'clock we pass the Laotian Custom House on our left, and, thanks to our flag, we are not stopped."

10: d'Orleans--289-290 T-3 (1891-92) 1894 Laos
116, 133, 441, 501, 563

"Lower down,[LSS: at Luang Prabang] lying against the river bank itself, immense rafts, real houses of thirty to forty yards long, carry stocks of merchandise and of various commodities, regularly [290] stacked one above the other. Chinamen live in these floating establishments.

The bank only rises some fifteen yards, and the shallow water scarcely hides a few sandbanks, while the calm powerful river flows on in a muddy stream more than 400 yards wide."

10: d'Orleans--339 T-3 (1891-92) 1894 Laos
116, 133, 505

"This brings us to the confluent of the Nam Kane, which is not more than 130 feet broad, and is only accessible to canoes of light draught, whereas if there was more water, it could be utilized for the transport of goods as far as Luang Prabang. From Vinh to this latter place, the journey now takes about thirty days and the region situated between the coast of Annam and the Mekong is a very fertile one. This is the plateau of Poûon, which is in the possession of an European climate, the vine, fruit trees, melons and other European plants thriving well there. The country is a very healthy one, and there is a prosperous future before the intelligent colonists who know how to go to work."

10: d'Orleans--367-368 T-3 (1891-92) 1894 Laos
116, 133, 173

[LSS: between Luang Prabang and Paklay] "Some of the rocks have a story of their own. In the afternoon of the 20th we leave on our left a chalk cliff, which descends precipitously from a height of some 650 feet into the stream. On the sides of the mountain the trees manage to cling somehow or other, and numerous fissures, forming here and there [368] grottoes visible up to a great height, while black portions of the rock, harder than the rest and washed by the rain, hang in gigantic stalactites.

In vain I search with my glass the nooks and corners in the hope of finding a pagoda. There are no statues, but at about 160 feet from the top, on a white surface, I make out a sort of escutcheon, filled with small rows of Buddhas.

This rock is called Pakao (the white rock). A Kha, runs the tradition, having ventured upon the summit to look at the river, was carried over the edge by a strong wind, and touched the water. But far from being killed he swam for some miles down stream and was received by the canoes of a village. The inhabitants, marvelling at what had occurred, fell prostrate before the Kha, gave him presents and named him their king."

23: Franck--260-261 T-2 (1924) 1926 Laotians-1-2
116, 133, 491

"At Muongsen there begins one of the greatest automobile climbs I have ever seen, up and up and forever up through the jungled ranges of the great Annamese chain, an ascension unforgettable both for its magnificence and its danger. We climbed abruptly to an elevation of fifteen hundred meters, a full mile above sea-level, without moving forward a mile on the map. The road, forever clawing itself a place in the flank of the mountain, constantly making great detours, looking always for an opening, a gap to slip through, writhed like a tortured snake, struggled fiercely upward, grew dizzy with effort, took breath again, and climbed valiantly onward. On the left, or, worse still, on the right, the abyss always yawned. Our wheels touched the edge of space and flung stones off down sheer wooded slopes into le vide--emptiness; in many places there were curves so sharp that we had just room between the jagged mountain wall and the bottomless pit to make the turn by backing and filling where the slightest miscalculation might have meant destruction. Even then we barely got by without striking a lamp on the recently blasted mountain-side or dropping a hind wheel over the edge.[261]

Between the trees of every size there were glimpses here and there for an instant of the great Annamese chain we were struggling to surmount. The narrow little boats fighting their way up the rapids of the river we had crossed again at the beginning of the climb had long since disappeared; the river itself was gone. Giant ferns, valleys full of banana-plants, perfect tenement clothes-line mazes of jungle vines, range after

blue range of the densest forest-jungle sank beneath us, and still the climbing continued, steadily, inexorably, forever. Sometimes, when the road was completely exhausted, it went a little way on the level, but only long enough to catch its breath, as quickly as do the barrel-chested Indians of the Andes, before digging its toes into the mountain-side again. The air became fresher; the humid scent of the tropics disappeared; with every wheel-turn it was more pleasure to breathe. Behind and below us lay an ocean of branches, a vegetation so compact that it filled the vast ravine of the visible world to its very edges, like an overflowing bowl of greens, an immense panorama of verdure dotted with densely black patches of shade that looked like the mouths of caves."

66: Dobby--299[4] N-5 (no date) 1950 Laotians
116, 133, 361

"The settlements of Laos are generally along the Mekong itself, with Vientiane, Luang, Prabang, Pakse, Savannakhet and Tha Khek as the largest. The river is the chief line of transport, especially between Savannakhet and Vientiane, but contact with the exterior by way of the Mekong is impeded by rapids, narrows and shifting sandbanks, the signs of an immature river."

68: Mouhot--135-136 N-5 (1858-61) 1864 Laotians
116, 361, 489, 133

"On the 24th of June [HD: 1861] I arrived at Paklaïe, lat. 19° 16'58", the first small town on my northward route. It is situated on the Mekon, and is a charming place; the inhabitants seem well off; the houses elegant and spacious,--larger, indeed, than I have seen before in this country; and everything betokens a degree of prosperity which I have also remarked wherever I have stopped since. The Mekon at this place is much larger than the Menam at Bangkok, and forces its way between the lofty mountains with a noise resembling the roaring of the sea and the impetuosity of a torrent, seeming scarcely able to keep within its bed. There are many rapids between Paklaïe and Louang Prabang, which is ten or fifteen days' painful travelling.

I was tired of my long journey on elephants, and was [136] anxious to hire a boat here, but the chief and some of the inhabitants, fearing that I might meet with some accident, advised me to continue my route by land. I therefore proceeded as far as Thadua, ninety miles farther north, and during eight days passed through much the same style of country as before, changing one valley for another, and crossing mountains which became more and more elevated, and being more than ever annoyed by the leeches. We were, however, no longer compelled to sleep in the jungle, for every evening we reached some hamlet or village, where we found shelter either in a pagoda or caravanserai."

69: Lewis T-5 (1950) 1951 AM 1 Indochina
Laotians AM 8

A DRAGON APPARENT

000 Up till the last fraction of a second before a thousand graceful stems screened it from our view it was still upright and quite level. The soldiers in it had hardly risen from their seats and raised their arms not so much in alarm, it seemed, as to wave farewell.

Soon after, the infantry climbed down from the lorries and began their march in single file along the sides of the road in front. This manœuvre seemed to me not only useless but dangerous, since nothing could have been easier for ambushers than to let the soldiers go by and then destroy the defenceless vehicles. In the spirit of one who whistles in the dark to keep his courage up, the armoured car ahead occasionally opened up with its machine-guns and 2-cm. cannon, provoking, to the great discomfort of the following cars, one small forest fire. We never heard that the enemy
494 was other than imaginary. At five in the afternoon we crawled into the village of Vang Vieng, having done about twenty miles since mid-day.

133 Vang Vieng was just such another village as the one where we had had our mid-day Chinese soup, but it was set in the most staggering surroundings. Overhanging it was a range of mountains which were not very high, since the peaks only reached 8000 feet, but which did not look like any mountains I had ever seen before. There was no visual preparation by a gently rising foreground of foothills. These were stupendous walls of rock rising 4000, 5000 and 6000 feet sheer out of an absolutely flat plain. We were overhung, as it were, by a huge scrabbling in the sky, which at its base had been erased by mists. Dupont said that we would pass over these mountains that night.

494 It was at Vang Vieng that Dupont had planned to slip away. His
725 resolution was only slightly shaken when it was announced that the
669 whole convoy would stay in the village overnight, owing to the presence of a small force of Viet-Minh, which the infantry would have to clear out, in a village fifteen kilometres further along the

69: Lewis T-5 (1950) 1951 AM1 Indochina
Laotians AM8

133

The fantastic landscape of northern Laos

[facing p. 272]

China Geographical Service /Service géographique de l'Indochine/ and the road surveys made by administrators at the heads of provinces nevertheless agree substantially in estimating the area of Laos at approximately 250,000 square kilometers, or about half that of France. 131 654

Population. This is the largest of the five countries in French Indo-China, and it is also the least densely populated. According to information collected on the spot, the population must be between a million and 1,200,000 inhabitants, a figure appreciably larger than the one figuring in the official documents, which estimate it to be only 800,000. Persons of the Laotian race in the strict /3/ sense form the majority. They populate the plains which are watered by the Mékong and its tributaries and the low altitude plateaus. The mountains are inhabited by highly diverse races belonging to various ethnic types, some of which are related to the Chinese, and others to the Tibetan branch, while still others are grouped under the generic name of "Khas." These various groups are scattered over the western side of the Annamitic Chain, the foothills of the plateau of Trân-Ninh and in the upper valley of the Mékong. 161 /162/ 162

The extremely low population density is to be explained by the Siamese and Chinese invasions in the course of the nineteenth century. The "Hos," plunderers who came from Yunnan, massacred the inhabitants after they had burned their villages and forced those who escaped famine or torture to settle in another region. The Siamese proceeded in a more methodical manner and depopulated the country by transporting inhabitants, livestock and elephants to the right bank of the Mekong and oftentimes taking them as far as the valley of the Ménam. 162 166 648* 175

Upper Laos. Upper Laos, a ramification of the Tibetan plateau, "is an inextricable tangle /4/ of wild and wooded mountains in the midst of which paths wind like gigantic Russian mountains" (1). The country has a savage look. These high 133 133 137

1. Dr. Lefèvre, "Le Haut-Laos" (Bulletin de la Société de Géographie commerciale, 1898).

mountain chains, which are cut here and there by deep valleys where torrents which are often invisible flow, are covered with

133 vast impenetrable forests and "the traveler sees only tall grass or
137 gigantic trees intertwined with lianas, then all at once, through a break in the foliage, he discovers the cascades of a river. This is the only noise to interrupt the impressive silence of these great forests" (2).

2. L. de Reinach, Le Laos, 1911.

133 Set against the huge mountain masses of Yunnan, this tormented region has always been the natural refuge of peoples driven out of India or China by famine, great invasions or religious discord, and its orography explains, in large measure, the multiplicity of tiny
/631/ states which were formed there throughout the ages. Its abrupt defiles radiate out and, so to speak, become calmed in the valleys of the Ménam, the Mékong and the Red River, and its principal substructure spreads out /5/ and ends in a vast plateau known as the plateau of Tran-Ninh, whose hillocks are planted with pine trees and drop suddenly from east to west.

In the southeast, however, the Tran-Ninh plateau clings "like an excrescence" to a long artery known as the Annamitic Chain which forms a distinct line of demarcation between Laos and Annam. This chain runs parallel to the coast in a northwest-southeast direction, and its peaks go all the way down to the Mékong by successive stages, first forming plateaus or folds of ground covered with thick forests (dông in Laotian), then slighter undulations where there are forest glades (khok in Laotian), and finally vast ricefields ending in the river.

The Mékong. This great river frontier which, over 800 kilometers of its length, marks the political separation of French Indo-China from the kingdom of Siam, gives life to Laos, together with its tributaries, "as the Nile constitutes Egypt." It fertilizes it with
/226/ its alluvia, feeds the native with its fish and guarantees transport for
/505/ his rafts and pirogues from north to south. But this liquid highway where nature seems to have taken pleasure in piling up obstacles and which is cut by numerous rapids and barred by waterfalls, can not be
/502/ /6/ regarded as usable for regular navigation over all of its length.

133 Fed by the melting snows of Tibet, the Mékong enters Laos through a capricious gorge, widens for a moment in the alluvia of an old lake basin and narrows again towards Luang-Prabang. Grandiose surroundings framed by the blue line of the far-off peaks give it what

seems to be a cloak of verdure with deep, harmonious folds. Its 133
bed is deeply cut and scattered with rocks and rapids as far as a point upriver from Vientiane where it attains an average width of 900 meters. Enormous calcareous rocks strung out like beads or laid on in cliffs like a veneer alternate with graceful beaches, and here and there hamlets cling to the hillsides which are lit up, as if by a flame in the sun, by the gilded spire of a pagoda. . . .

After describing a sharp bend to the south it flows peacefully towards Savannakhet between low banks which are now sandy and now covered with vigorous vegetation. It is 1500 meters in width, and its waters are deep enough in this level stretch to permit steamboat navigation all year long. Downstream from Savannakhet stretches a sudden succession of staggered rapids over a /7/ length of about 160 kilometers. These are the "Khemmarat." The current is extremely violent and forms eddies and whirlpools, while an irregular channel winds in the midst of the rocky bed. "The yellowish waters break against the rocks with a dreadful noise. Men have fled its banks, and the great trees of the forest lean from both sides over the abyss, into which their weight often drags them. A few daring fishermen have made themselves homes in the crags of the rocks, but these unfortunate creatures scarcely have time to flee when the first rains come, so great is the rapidity with which the waters of the river rise" (1).

1. De Carné, Voyage en Indochine et dans l'Empire chinois.

When it leaves the rapids the Mékong widens out (two kilometers), with isles of verdure scattered here and there, and again becomes navigable as far as Khône, the old capital of Lower Laos. Its banks grow higher again, and many villages rise in the midst of /134/
rich and fertile plains. It reaches a width as great as eight or ten kilometers and gives birth to an important group of islands, including the island of Khône which is famous for its waterfalls which bring navigation to an absolute halt. A railroad has been built /496/
across the island by the French administration to serve as a connecting link /8/ between the level stretch of Khône and that of Kratié (Cambodia).

Laos ends at South Khône, and the coastal reach of the Mekong, which belongs to Cambodia and to Cochinchina, begins.

The great river is fed from the left by multiple tributaries, the 133
chief ones of which (Nam-Ou, Nam-Ngum, Nam-Ka-Dinh, 132

133 Sé-Bang-Fai, Sé-Bang-Hiên) descend from the western slopes of the
132 Annamitic Chain. Its tributaries on the right are few in number and unimportant (Nam-Moun). The rate of flow of all of these, like that of the Mékong, is subject to the variations of the seasons, which are themselves conditioned, in the tropical zone in which all of Láos is situated, by the alternatively dry and rainy monsoons.

Xieng-Khouang) and Candanapuri (Sayfong-Vientiane). At first all these had to recognize the suzerainty of Angkor (2), then 174 631

2. Cf. G. Maspero, Ibid., and "Sayfong, une ville morte" (Bulletin de l'E.F.E.O., Vol. III, No. 1, January-March 1903).

they were conquered by the king of Sukhothai, as is revealed to us precisely by the inscription of Rama-Khameng.

This lack of unity between the principalities is to be explained in large part by the geographical configuration of the country. The many level stretches of the Mékong, "separated by rapids which were difficult to negotiate" and by this very fact "almost /34/ foreign to one another" (1), placed serious obstacles 174 631 133

1. Cf. G. Maspero, ibid. (Moeurs et coutumes de l'ancien Laos, p. 225.)

in the way of any political fusion of groups which were nevertheless of the same race and the same language and whose frontiers touched one another. It required all the energy of Fa-Ngoun "the Conqueror," the prince of Muong-Swa, to achieve Laotian unity in the following century after many campaigns, and even then chiefs of provinces (muong) continued to govern their fiefs in a spirit of independence which unceasingly impelled them to shake off the yoke of the sovereign. This vestige of feudalism was to remain, in the last analysis, the dominant characteristic of the whole history of these principalities which were shut off from one another in a natural isolation which favored the persistence of local authorities

/35/ CHAPTER IV
THE KINGDOM OF LAN-XANG (1353-1707)

Previous to 1315 A.D., the date of birth of Fa-Ngoun, the tradition of Muong-Swa has preserved only a long list of names of native chieftains which unrolls into a tortuous labyrinth where Ariadne's thread is often broken. From the fables contained in the manuscripts on latania leaves which Auguste Pavie searched through meticulously during his first stay in Paklay, it is possible 175

669 royal troops succeeded in dispersing the partisans of Intha-Som and
175° forced them, after a bloody encounter, to retreat in disorder along the Nam-Ou. Ong-Ek swam across the river and fled to Phoutong-Nongboua. As for Intha-Som, he was able to gain the Sip-Song-Panas where he kept a close watch on events and waited for a more favorable opportunity.

Finally free to organize his conquest, King-Kitsarath endeavored to restore some measure of order in the kingdom, which was greatly in need thereof. Aided by his cousin Khamone-Noi (1), he succeeded

1. See p. 133.

within a few years in restoring tranquillity to his subjects. Luang-
/633/ Prabang, once again a royal metropolis, was slowly repopulated and resumed the foremost place in a diminished State.

633 Gracefully stretching across the junction of the Mekong and the
175° Nam-Khane and dominated by the verdant hill of the "Phou-Si," the
133 city regained some of its animation and gradually became covered
/181/ with new buildings grouped around the ancient pagodas which recalled the past grandeur of the legendary Muong-Swa.

"Moreover, the configuration of the principality's territory and the particular topography of the region combined at this river junction to provide all the elements for the prosperity of a great city. Luang-Prabang is in fact contained in the immediate zone where the region's three great navigable watercourses converge on the Mekong. These watercourses (Nam-Ou, Nam-Suong, Nam-Khane) have in the past favored the political centralization of the country as well as trade relations with China, Tonkin and Annam. Whereas both upstream and downstream for a distance of several hundred kilometers the banks of the river are constantly cut deep between the mountains and nowhere offer a surface of flat land which would lend itself to large agglomerations, here nature has provided on both banks a broad extent of land which can be cultivated as ricefields and is capable of supplying all the needs of a large population" (1).

1. Cf. Captain Cupet, Mission Pavie, Vol. III /Voyages au Laos et chez les sauvages du Sud-Est de l'Indochine (1900)/, p. 34.

645° At his death, which occurred about 1726, King-Kitsarath left
595 three daughters born of three different wives /182/ /Page 182 is
175°

114 which he felt during his stay in Laos, despite the somber presentiments which prevented him, as he admits, "from appreciating and enjoying things as formerly."

For three years he had been a tireless explorer of the Indo-Chinese brush, a prey to the fatigues, the miseries, the privations and the dangers of the sly and evil forest. A poor traveler, as he himself ingrenuously relates, he had sacrificed his family, his comfort and his health (and perhaps his life) "to the sole end of being useful to his fellow men, of discovering an unknown insect, plant or animal /220/ or verifying a latitude point in a remote region."

133 361 Leaving Bangkok on April 12, he reached Paklay on June 24 after crossing the terrible forest of the "King of Fire" for the second time and breathing "in the midst of an atmosphere of extreme stench, hot like a steam bath filled with putrid miasmas." Paklay was a great consolation to him. "A charming village," he wrote, "very rich, larger and more beautiful than any which I have so far encountered. The houses are elegant and spacious, and everything denotes an ease and well-being which I have since noted in all the localities where I have stopped. The Mekong is much wider there than the Menam at Bangkok, and it is with a noise like that of the sea and the impetuosity of a torrent that it cuts a path between high mountains which seem to have difficulty containing it in its bed. . . . The sight of this beautiful river had the same effect on me as meeting a friend, for I have long drunk of its waters. It is an old acquaintance, and has long cradled and tormented me. Now it flows majestic, full to the brim. . . it is a truly grandiose spectacle."

Dissuaded from going up the Mekong by the inhabitants, who feared that some mischance might befall him /221/ /Page 221 is devoted to an illustration: "The Mekong at Paklay."--Translator/ in the rapids, he resumed his journey on elephant back and reached Luang-Prabang on July 25. "A delicious little city," he noted, "which stretches over a space of a square mile and holds a population, not of 80,000 inhabitants as Mgr. Pallegoix says in his work on Siam, but of only seven or eight thousand. The site is charming, and the mountains which frame the city form a circular valley in the shape of an amphitheater nine miles wide which must once have been a closed basin. The countryside is extremely pretty and reminds one of the beautiful lakes of Como and Geneva.

132 "Were it not for the sun of the tropics which shines constantly on this valley, or if a gentle breeze tempered the overpowering heat which prevails there during the day, this spot would be a little paradise.

115: Le Boulanger--138 H-4 (no date) 1931 AM1 Indochina
(1700-1887) Laotians AM8

Fig. 12. The Mekong at Paklay

/Facing p. 220/

648* occupy, by force if necessary (2), the posts "improperly" held by the
175*

2. However, the governor general of Indo-China "recommended avoiding joining battle, insofar as possible. It was essential," he said, "to seek to gain the inhabitants' sympathy and always to prefer diplomacy and peaceful means to uncertain engagements." (Cf. L. de Reinach, op. cit. /Le Laos (Posthumous edition), Paris, 1911./, p. 16.)

Siamese as far as the left bank of the Mekong. The first column, under the command of Vice-resident Bastard and Captain Thoreux, had Stung-Treng and Khone as its objectives. The second, led by Dufrenil the resident of Dong-Hoi, who was seconded by the militia inspector Claude Garnier, crossed the ridge of Ai-Lao and advanced towards Muong-Phine. The third, which was placed under Luce, the resident of Vinh, and under Inspector Grosgurin, was given Cammon as its theater of operations.

By setting the farthest limit of its occupation at the bed of the great river, the /308/ French government clearly indicated its in-
/133 tention to regard the Mekong as constituting the natural line of
101/ separation between Siam and French Indo-China. Now throughout the ages, as we have seen, the Laotian principalities' territory had always extended over both banks, and over the whole of its course the Mekong had established close age-old ties "between the folk on the banks." The simplified formula of the "Mekong frontier" was therefore arbitrary and singularly incorrect, but no matter how many objections Pavie raised in this connection it was always retained because it seemed the clearest and most alluring solution to our interminable boundary difficulties.

The Dufrenil-Garnier column accomplished its mission without any untoward incident. In scarcely a month it had covered three hundred kilometers and was able on May 26 to force the eight Siamese garrisons, which had cut all the roads all the way from Ai-Lao, back to the banks of the Mekong opposite Kemmarat.

At Khone, on the other hand, after first withdrawing before the forces of Captain Thoreux without putting up the least resistance, the Siamese suddenly returned to the offensive, seized the captain, who was taking an unescorted convoy from Stung-Treng to Khone, by surprise and /309/ invested the outpost which Lieutenant Pourchot was defending. The island was not freed until July.

115: Le Boulanger--199 H-4 (no date) 1931 AM1 Indochina
(20th Cent.) Laotians AM8

133
487

Fig. 18. Bridge over the Nam-Khane at Luang-Prabang.

/Facing p. 326/

131 Longitudinally it extends from 97° 45' (right bank of the Mékong at Xieng-Sèn) to 106° E. longitude in one point of [40] the Annamitic Chain bordering on the basin of the Srépok or Sé-Bang Khan.

The boundaries of Laos are (1):

(1) In what follows it will be necessary to consult the map of the Pavie mission, published by Challamel in Paris. There it will particularly be noted that Laos borders on Cambodia, Cochinchina and Annam all at once in the south.

a. FROM THE POLITICAL POINT OF VIEW

131 1. In the northeast, the Sib-Song-Chau-Thaï (Tonkin, province of Van-Bu);

2. In the north, Yun-Nan (prefecture of S'émao);

648 3. In the northwest, the Anglo-Burmese Shan State of Xieng-Tong as far as Nam-Huok, slightly upstream from Xieng-Sèn;

4. In the west:

a) The Siamese Shan and Youn States of Xieng-Haï and Muong-Nan;

b) Siam itself (province of Outaradit);

c) The provinces which are tributary to Siam but which were placed in the zone of French influence by the London declaration of January 15, 1896; they are: Lao-Pou-Ellin, with its capital in Ban-Dua-Makeng; Lao-Kao, with its capital in Oubône; and the principality of Tiampa-Sac (Bassac);

d) Cambodia (province of Kompong-Thom);

5. In the south, the provinces of Kratié (Cambodia), Tayninh (Cochinchina) and Binh-Thuan (Annam);

6. In the east, Annam.

b. FROM THE PHYSICAL POINT OF VIEW

131 1. In the northern region:

133 a) The watershed on the left side of the valley of the Nam-La, as far as the Mékong;

[41] b) The right bank of the Mékong, from its junction with the Nam-La to its junction with the Nam-Houk;

2. In the western region:

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a) The right bank of the Mekong, from its junction with the Nam-Huok to the foot of Pou-Padaï, somewhat downstream from the mouth of the Nam-Ngao;

b) The crest of Pou-Padaï, then the boundary between the State of Muong-Nan and the Siamese province of Outaradit on the one hand, and the Laotian provinces of Muong-Houn-Sieng-Houn, Sagaboury, Outhaï-Thani and Kèn-Tao on the other, as far as the mouth of the Nam-Huong, but leaving the sources of the Mé Nam and of the Nam-Pat in the kingdom of Luang-Prabang (1);

(1) This frontier has been precisely defined for 150 years and is constituted by the following mountains: P. Padaï, P. Sakô, P. Dine-Deng, P. Kiou-Khating, P. Kha-Tang-Luong, P. Kiou-Mao, the plain called Na-Hon, P. Kheugne, P. Gniac, P. Kiou-Met, P. Koun-Houng, P. Pa-Thaï, P. Gnia-Mi, P. Koun-Tane, P. Kiou-Kang, P. Pouï, P. Lak-Mun, the streams of Houei-Noun and Houei-Kha, P. Liebp-Paï, P. Dou-Tong-Luong, P. Dou-Song-Tone (Houei-Song-Kouei), P. Tani, P. Pang-Nga, and finally the rivers Nam-Tane and Nam-Huong.

c) The right bank of the Mékong as far as Siemboc;

3. In the southern region:

A line starting at Thboung-Kla, following the Prek-Kadol and veering sharply south-southeast to include all the southern basin of the Srépok or Sébang-Khan and join the Annamitic Chain;

4. In the eastern region:

a) The crest line of the Annamitic Chain, which is also the watershed between the Mékong basin and those of the China Sea and the Gulf of Tonkin. This line cuts the Attopeu road in Qui-Nhon between Kon-Xalam and Kon-Tiorak (2), the Savannakhet road in Quang-Tri

(2) However, the valley of the Dak-Ayoun, a tributary of the Song-Ba, belongs to Laos.

at the gap of Lao-Bao (Aï-Lao) and the Pak-Hin-Boun road in Vinh at the ridge of Tram-Mua.

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After following the valley of the Song-Ca to about the 102nd meridian, it turns northward, following the latter meridian approximately as far as the Song-Ma and leaving to Laos the [42] deep valleys of the Nam-Mo and Nam-Neun or Song-Ca. The left side of the Song-Ma then forms the limit between Tonkin and Laos as far as a point slightly beyond the Nam-Het. Then this limit follows the crest of Pou-Sang-Lam and moves northwest along the watersheds between the basins of the coastal rivers of Annam and the Mékong basin. It cuts across the course of the Nam-Ngoua, a subtributary of the Mékong, at Sop-Nao and then, with the same orientation, strikes the peak of Toung-Kouang to the south of Muong-Lé (Chinese frontier). From this point the frontier takes a north-south direction and follows the peaks of the range which separates the waters of the Nam-Hou from those of the Nam-Ban (Lo-So-Kiang) and the Nam-La. Then it moves northwest and strikes the junction of this latter river with the Mékong (1).

(1) The boundaries between Laos, Annam and Tonkin are still ill-defined, particularly in the case of the Hua-Pahn. Part of the latter, although of Thai race and language, was recently annexed to Annam. It will be seen that it is impossible to fix the limits of Laos in any more precise fashion.

The greatest length in a north-south direction measures approximately 1160 kilometers.

Because of the many bends which the Mékong makes between the 18th and 22nd parallels, Laos does not have a regular geometrical shape. There are very narrow parts and very wide parts. Thus, measuring distances parallel to the equator and as the crow flies, Laos is only about fifty kilometers wide in its northern extremity in the region of Muong-Hou. Somewhat further south, between Xieng-Sen and Thanh-Hoa, it is about 450 kilometers wide; from Luang-Prabang to Thanh-Hoa, about 230 kilometers; from Pak-Lay to the ridge of Tram-Mua, about 400 kilometers; from Pak-Hin-Boun to the ridge of Tram-Mua, about 120 kilometers; from Savannakhet to A1-Lao, about 220 kilometers; from Khong to the

Annamitic Chain, about 300 kilometers; and finally from Thboung-Kla to the Chain, about 250 kilometers. Below this parallel, moreover, the territory of Laos ends in a strip of terrain about 150 to 200 kilometers wide (province of Darlac). The width of Laos thus varies between 50 and 450 kilometers approximately, giving an average width of about 250 kilometers. 131 133

[43] § II--AREA

It is not possible at present to give the exact area of the colony, since boundaries have not been fixed at certain points and the mountain ranges are scarcely known at all.

Any figure given can only be approximate, until such time as a complete triangulation makes it possible to calculate the area of the territory in precise fashion.

As of the present time, official sources agree that Laos has an approximate area of 267,700 square kilometers, that is to say:

Northern Laos	155,000
Southern Laos	112,000

This area is 49 percent of that of France (1). It is the largest

(1) Or approximately the area of Italy.

of the five countries which go to make up French Indo-China, and it is also the least populated.

§ III--OROGRAPHY

Taken as a whole, the Indo-Chinese mountain mass seems to be a ramification of the plateau of Tibet. Indeed, spurs jut out from from the latter in all directions, particularly from its southeastern extremity. These spurs form the vast plateau of Yunnan, and then stretch out to capes Négrais, Bolor, Bang-Pla-Soi and Padaran. 133

First there is the chain which forms the watershed between the Brahmaputra and the Irrawaddy (Arrakan-Yoma); then the peaks which form the watershed between the Irrawaddy and the Salouen on the one hand, and between the Salouen and the Ménam on the other (in the plateau of Bau the Malay peninsula springs out of this latter chain); then the folds which separate the Ménam from the Mékong and which are called Pnom-Dangrek in Siam; and finally the high

133 line which rises first between the [44] Mékong and the Red River, and then between the Mékong and the China Sea, and which is called the plateau of Tran-Ninh and the Annamitic Chain.

These heavy ribs, which start from an altitude of 7000 meters and lose themselves in several seas, stretch east and south like the tentacles of a gigantic octopus and form the skeleton of the Indo-Chinese continent. In the folds between these ribs flow the great fluvial arteries which are mentioned above and which often spread out over several thousands of kilometers, now flowing between sheer banks and now expanding over plateaus or immense plains in which the populations are grouped.

Francis Garnier has compared the Indo-Chinese mountain mass to an immense hand of which the plateau of Tibet is the palm and the five fingers are the Irrawaddy, the Salouen, the Ménam, the Mékong and the Red River.

In what follows we shall be concerned only with the chain which ends at Padaran, for only this latter has a direct bearing on Laos.

The orographic system of Laos has its origin, as we have seen, in the plateau of Yunnan, which is itself derived from the Tibetan mountain mass.

In Tali-Fou begins the mountainous branch which enters Laos in Muong-Hou at an average altitude of 1600 meters and separates the valley of the Nam-Hou from those of the Black River and of the Nam-La and Nam-Ta, two right-bank tributaries of the Mékong.

At the junction of Pou-Loï (1) (2000 meters) the chain spreads

(1) Pou = mountain.

out and sends ramifications in all directions between the Song-Ca, the Nam-Het (a tributary of the Song-Ma), the Nam-Suong and the Nam-Khan, which are tributaries of the Mékong.

The general character of all this part of northern Laos is quite clear-cut. It is nothing more than a succession of crests separated by narrow valleys in which the Mékong and its left-bank tributaries have laboriously cut an extremely slim passage.

[45] "Upper Laos," writes Dr. Lefèvre, "is an inextricable tangle of wild and wooded mountains, in the midst of which paths

wind like gigantic Russian mountains" (1).

(1) Bulletin de la Soc. de Géog. commerciale, 1898, Vol. XX, No. 12. Dr. Lefèvre, "Le Haut Laos, sa situation économique." 133

The slopes are sheer, a fact which explains the torrential character of the great river and its tributaries. Thus Xieng-Hong is at an altitude of 700 meters and Vien-Tiane is at about the 300 meter level, making a difference in level of 400 meters over a space of four degrees, whereas from Vien-Tiane to the sea, that is to say over eight degrees, the drop is only 300 meters.

The country has a wild look and the high chains, cut here and there by deep valleys in which torrents flow which are often invisible, are covered with immense impenetrable forests. The traveler who explores these regions sees only tall grass or gigantic trees intertwined with lianas. Then all at once a break in the foliage shows the cascades of a river. This is the only noise which comes to interrupt the impressive silence of the great forests.

The highest points of this northern mountain mass are Pou-Fal in the province of Muong-Ngoi (1600 meters) and Pou-Loï, mentioned above, in Luang-Prabang (2000 meters).

Further south, between Nam-Khan and Nam-Sane, comes the vast plateau of Trane-Ninh which stretches over an area of 1200 square kilometers. This mass, the average altitude of which varies between 1000 and 1500 meters, is crossed by sheer valleys through which flow torrents and rivers ending either at the Mékong or the Gulf of Tonkin. It is a superb region with a temperate climate (2). 133 132

(2) An obvious spot for establishing a sanatorium.

fertile soil and luxuriant vegetation, and would be admirably suited to any kind of livestock breeding or large-scale farming. Its remoteness and especially the difficulty of communication are, for the moment, the only obstacles to the success of any plans which one might make.

Slightly to the north of the 18th parallel there branches off the long chain which ends at [46] Padaran, that is to say at about the 11th parallel. It is known as the Annamitic Chain and forms a clear-cut line of demarcation between Laos and Annam. It is also

a climatic dividing line. On the Annam side, in fact, each monsoon has its rainy season, a fact which makes it possible to grow two rice crops per year. On the Laotian side there is one rainy season and one dry season. The two are sharply separated, so that there can be only one crop. The chain runs parallel to the coast of Annam in a northwest-southeast direction, leaving Annam only a narrow strip of terrain, while it enables the Mékong to be joined on its left bank by watercourses which often stretch over wide extents. On the Annam side the slopes are steep and the valleys narrow. On the Laotian side the slopes generally do not terminate so abruptly. They come down to the Mékong in successive stages, first forming plateaus or folds in the terrain which are covered with thick forests (Dong in Laotian), then gentler undulations on which there are forest glades (Khok in Laotian) and finally the vast ricefields which stretch down to the Mékong.

The large thick forests have the same wild appearance as in northern Laos. Oftentimes they do not even let the sun's rays through, and form domes of foliage which hide the horizon.

The forest glades have two different aspects, depending on the season. During the rainy season there is shadow and often a carpet of verdure, while during the dry season the bare trees and the naked soil which is covered only with dead leaves and reflects the burning rays of the sun, give the appearance of a desolate and abandoned land.

The Annamitic Chain first separates the Nam-Nhoung, a right-bank tributary of the Nam-Ka-Dinh, from the Song-Ca which flows into the Gulf of Tonkin near Vinh. It enters the province of Cammon, where its average altitude is 1000 to 1200 meters. The ridge of Tram Mua, on the road from Vinh to Pak-Hin-Boun, is at the 1280 meter level. In Cammon there are, so to speak, no forest glades. [47] [Illustration] [48] [Blank page] [49] for the plateaus themselves usually run down to the banks of the Mékong.

Of the latter, the most noteworthy is that of Na-Kaï or Pou-Hac, the limits of which are formed by the courses of the Nam-Hin-Boun and of the Sé (1) -Bang-Faï. This vast plateau lies at an altitude

(1) Nam and Sé mean river. Nam is the term generally employed in northern Laos, and Sé in southern Laos.

of about 800 meters and, like the plain, is covered with forest

glades, but "instead of the oil trees, bogus teaks with their whitish foliage and their trunks deeply dented with wide grooves, we find gigantic, shade-giving pines; and instead of the bare, powdery or viscous soil, a fine level turf on which it is a pleasure to walk and where it is enjoyable to linger and slow one's pace" (2).

(2) Letter from Captain Rivière, reproduced by Captain Gosselin in Le Laos et le Protectorat français, 1900.

It is also a region of wild beasts, and the inhabitants of the muong of Ma-Ha-Saï come there every year to hunt elephants.

At the very source of the Sé-Bang-Faï there springs up a noteworthy peak about 1200 meters high from which many watercourses flow down to the Annam coast.

South of this point the Annamitic Chain drops to give way to the gap of Aï-Lao (about 410 meters in altitude) on the road from Savannakhet to Quang-Tri. Then the chain rises to form walls which are often more than 2000 meters high in the provinces of Saravane and Attopeu. Thus, Pou-Atouat has an altitude of about 2500 meters. It is an important orographic center from which spring the Sékhong and the Poyo, which belong to the Mékong basin, and also the Song-Buong, a tributary of the Song-Caï which is a coastal river of Annam.

Between the Sédone and the Sékhong, at about the 15th parallel, stands the remarkable plateau of the Bolovens, which takes its name from the Kha tribe which inhabits it. It is a mass about 100 kilometers in diameter, and its height varies between 600 and 1200 meters. Travelers who have explored it have extolled the mildness of the climate, the wealth of the vegetation, the beauty of the plains and the abundance of water, so [50] that Dr. Harmand suggested the idea that the plateau, which could easily be linked by road with the port of Tourane, might be made into the administrative center and sanatorium of our Indo-Chinese empire.

The part which the plateau may be called on to play in the future has been somewhat exaggerated. It would be imprudent to envisage it as a wonderland, [illustration here] an eldorado destined to a great future from the administrative, commercial and sanitary point of view. Today it is a plateau with well-cultivated slopes which yield fine harvests of cardamom and rice, as well as tobacco, cotton and Chinese nettles [ortie de Chine], and is inhabited by gentle, peaceful folk who live in handsome, well kept-up villages.

133 The market of Bassac owes its importance to the proximity of the plateau. It is therefore a storehouse for the Laotians of the whole 433 region, a reservoir [51] from which they draw. The part which it 438 plays is obviously a fine one, and no more can be asked of it.

There has also been much discussion as to whether large-scale breeding of buffalo and oxen would be successful there, for at present livestock is found only in the villages situated near the Sédone, that is to say, quite far from the plateau. The question has not yet been settled, and sufficient tests have not yet been made.

133 At the southernmost corner of the plateau there is a conical mountain about 800 meters in altitude which Francis Garnier baptized The Breast [le Téton] because of its shape, and to which he later gave the name Lagrée's Peak [Pic de Lagrée] in commemoration of the President of the Exploratory Commission of 1866.

[224] The elephant hunters of southern Laos go to the mountainous region of Saravane and Attopeu every year, and there they capture an annual quota of fifty to a hundred elephants.

133 To the east of Attopeu the mountains are inhabited by well-nigh independent Kha tribes--Cédangs, Djarais, Rognaos and Bahnars. The two latter tribes have almost been pacified, thanks [177 to the persevering efforts of the Christian missionaries of Kon-Toum. 797] This point is the center of the mission, and through it passes the road from Attopeu to Qui-Nhon. It crosses the Annamitic Chain 563 between Kon-Xalam and Kon-Tiorak at an altitude of about 900 meters. Near Attopeu this same road goes up over Pou-Satièng (400 meters), the last ramification of the great chain, which separates the basin of the Sé-Souk from that of the Sé-Kémane.

[135] This region of Pou-Satièng, Sé-Souk and Sé-Kémane has long been known to be rich in gold deposits.

§ IV--HYDROLOGY

a.--THE MÉKONG--GENERALITIES

133 It has often been said, and rightly so, that the Nile constituted Egypt. In the same way it can be said that the Mékong makes Laos, for is it not the river which gives what vitality there is to these vast isolated regions? Is it not the river which, by its annual floods, helps the growth of rice? Does it not supply, with its fish, a large

part of the natives' diet? Do not its alluvia yield the cotton, tobacco and indigo which are indispensable to the Laotian, and does not the river itself, in the high water period, transport the wood needed for cooking food, so that, in a manner of speaking, it has only to recede in order to collect firewood? Finally, from the commercial point of view, is not the Mékong the great fluvial artery and the only practical route joining Yunnan to Saigon? M. Blancsubé, a former deputy for Cochinchina, envisaged the use to which the Mékong could be put when he said:

"I see in our establishment throughout the whole Mékong valley, the means of making flow into Saigon the products of thirty kingdoms and tribes scattered along the river, as well as those of Yunnan and those of the interior provinces of China. I see the means of making Saigon into one of the greatest storehouses in the world, and making it the queen of the Far East."

The vision is a tempting one. Unfortunately, the reality is quite another thing. On the one hand the orientation of trade towards Bangkok was climaxed by the completion of the Korat railroad, while on our part the problem of making the Mékong navigable from Yunnan to the sea is still far from having been solved.

Looked at as a whole, the Mékong flows first in a largely north and south direction as far as Ban-Houé-Pak-Kop (1) (where the Houé-

(1) Pak = mouth, junction of rivers.

Kop flows into its right bank), then turns suddenly eastward in the gorge which it has cut around the plateau which forms the last stage of the Sib-Song-Pahn-Na.

Macey (2) says, in this connection, that one can almost certainly

(2) "Cinq ans au Laos." Lecture delivered before the Society of Commercial Geography [Société de Géographie commerciale] on November 19, 1895.

accept the hypothesis that in a relatively recent geological epoch the Mékong flowed into the sea in the Gulf of Siam through the valley of the present-day Ménam. The other branch of the Mékong which goes down to the sea through Cambodia and Cochinchina was a continuation of the Nam-Hou. It was only when an upheaval or

133 a fold occurred that the east-west dividing crest was formed which separated the waters as [58] we see them today. From that time on the upper branch of the Mékong was forced to erode a passage for itself and dug the "Cañon" which is its bed from Xieng-Kong to Pak-Hou.

"At this latter point, moreover, the cutting is quite evident, and the calcareous rock masses which form the right bank of the junction of the Nam-Hou and the Mékong continue along the right bank of the great river. The sheer wall has clearly been cut in two by the water of the branch which comes from Tibet and was turned from its course by the upheaval referred to above." (1)

(1) Francis Garnier also mentions the proximity of the rivers to one another: "The sources of the two watercourses (the Ménam and the Sé-Ngum, a right-bank tributary of the Mékong) are separated only by a very slight distance, and according to information from the natives one need only, during the high water period, drag a bark for a mile or two over fairly level ground in order to leave the Mékong basin and sail into the Ménam basin. Was it this proximity which occasioned the hypothetical indications on our old maps, according to which the two rivers communicated with one another?" (Francis Garnier, 1885, Voyage d'exploration en Indo-Chine.)

From Pak-Hou the Mékong therefore follows the direction of the Nam-Hou, that is to say that its course runs approximately north-south as far as Ban-Houé-Hat. At this point the river is turned eastward by a spur of Pou-Vieng (right bank) as far as Keng-Sa-Dok, which is downstream from Pat-Choum. In this region the river leaves the gorge at Sam-Pan-Na and has then cut a rather capricious course in the alluvia which fill an old lake basin, still represented today by several ponds including the Nong-Han-Noi and the Nong-Han-Xieng-Soum on the right bank. The last underspurs of Cammon and Cam-Kheut suddenly turn it in a general south-southeast direction, and thus it remains as far as Kratié in Cambodia, flowing through the middle of vast plains. Its peaceful course is interrupted all at once at Ban-Ta-Sa-Kou, slightly downstream from Ban-Mouk, by a succession of rapids dotted with small islands and isolated blocks in the midst of the current. The latter bear witness to the work of erosion which has taken place in these parts.

133 There is only one mountainous region of note in its whole course through the plains. This is formed by the spur which forces it to describe the bend of Pak-Moun and, on the right bank, by the mountains of Bassac which tower precipitously above it. Then the river spreads out more and more until [54] it forms t[illegible]together characteristic group of the Si-Pan-Don (four thousand islands) above the Khône waterfalls, where it falls down to its lower reach which is subject to the special conditions of the Ton-Lé-Sap risings.

103 The origin of the word Mékong is not certain. It is doubtless an abbreviation of Mé-Nam-Kong, that is to say, the mother of the waters which come from Kong (1).

(1) This does not refer to Khong, the former capital of Lower Laos, but to another Kong situated at about 22° 20' N. latitude and well known as a transit point for caravans going from Burma to China.

The total length of its course is approximately 4200 kilometers, about half of which belongs to Laos. It is one of the largest rivers in the world. The length of its course, which is approximately the same as that of the Amour or the Hoang-Hô, would place it tenth among all the world's rivers.

In addition to the region of Khong and the Khône waterfalls, where the river spreads out over ten kilometers and even more, there is an average breadth of 1200 to 1500 meters in the Bassac reach. In the Kemmarat rapids its average width is from 300 to 500 meters, but there are also narrows where it is scarcely 100 meters wide.

In the Vien-Tiane reach it has an average width of 300 to 800 meters, but between Vien-Tiane and Luang-Prabang it narrows down to less than 100 meters. Above Luang-Prabang and as far as Xieng-Khong its average width is only 150 to 250 meters. Then it spreads out again through low islands, to narrow down once and for all towards Tang-Hô.

The area of its basin has been estimated to be a million square kilometers.

"The rate of flow of the Mekong (2) has not yet been measured

113 (2) Vivien de Saint-Martin, Nouveau Dictionnaire de géographie universelle, 1887.

with the same degree of precision as those of the Irrawaddy, the

133 Mississippi and the rivers of western Europe. At Lakhône in Laos, Delaporte estimated the flow of the river to be 1350 cubic meters per second at the end of the dry season. In Bassac Garnier found 9000 cubic meters on December 5, and the waters had already fallen nine meters and the average velocity of the water was then only one meter per second. His calculations gave him [55] more than 50,000 cubic meters for the rate of flow in the period of high rising. Where the delta forks into three branches it must reach sixty or seventy thousand cubic meters. According to Boulengier it would be even higher than this enormous total. Whatever the case may be, the standard cannot be set at less than 12,000 cubic meters."

b.--HIGH AND LOW WATER PERIODS

132 133 We have already noted that in Laos there are two distinct seasons, a rainy season from May to October and a dry season from November to April. On the river the rainy season corresponds to the high water period, and the dry season to the low water period. The enormous valley of the Mékong does not fill or empty instantly. Its waters are always subject to either a rising or falling movement and, except perhaps for the months of March and April, the period when its waters are lowest and its oscillations are very slight, the river always shows a more or less marked rising or falling tendency. It will also be seen that on a river whose extent is so considerable and whose course is so capricious, now encumbered by rocks which obstruct its bed and now flowing peacefully through vast plains, the risings will not be the same at all points of its course. Through an odd peculiarity one of the highest water marks to be observed on the whole river is found on the island of Khône near what is perhaps the lowest mark. Thus at North Khône risings scarcely reach a height of 1.5 meters, whereas at South Khône, five kilometers downstream, they often exceed 18 meters. The average rising of the river is from ten to twelve meters and is due first of all to melting snows in Tibet, but especially to the rain brought by the southwest monsoon.

149: Reinach--42 G-3 (no date) 1901 AM1 Indochina
Laotians AM8

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c.--NAVIGABILITY OF THE MÉKONG
WHAT HAS BEEN ACCOMPLISHED--WHAT REMAINS TO BE ACCOMPLISHED

From the point of view of navigation, the Mékong does not constitute one continuous artery from one end to the other of its course. Several serious obstacles, such as the Khône waterfalls and the rapids of [56] Kemmarat, lie in the way of steam navigation. It has therefore been found necessary to divide the river, as far as navigability goes, into several reaches. These are:

1. The reach of Luang-Prabang or upper reach, which extends [Illustration here] from the Mékong's entry into Laos to Sam-Pan-Na, that is to say from approximately the 22nd parallel to the 18th.

In this reach navigation is impossible, even for pirogues, as far as Tang-Hô because of the river's irregular drop in level (approximately 160 meters over a distance of 180 kilometers) and the many rocks which encumber its bed.

From Tang-Hô to Vien-Tiane navigation by pirogues and [57] [Illustration] [58] [Blank page] [59] rafts is the rule and native boats function all year long despite fairly numerous rapids.

2. The reach of Vien-Tiane or middle reach, which extends from Sam-Pan-Na to Ban-Ta-Sa-Kou (right bank) or Huêin-Hin (left bank), that is to say from the 18th parallel to slightly below the 16th and the head of the Kemmarat rapids. This reach is navigable for steamships of a draft of one meter during almost all of the year.

Between this last reach and the following one comes the extremely precipitous part of the river which is known as the rapids of Kemmarat and stretches over a distance of 160 kilometers as far as Pak-Moun (15° 20'). In its present state steam navigation of any sort is impossible. All year long, however, rafts and pirogues can go downriver through the rapids, but only pirogues can go upriver.

3. The reach of Bassac, between Pak-Moun and North Khône, that is to say between approximately 15° 20' and 14°.

This reach is navigable all year long and over its entire length for rafts and pirogues, and only during three or four months (July to October) for steam launches.

To the south of this reach the Khône waterfalls form a complete obstacle to steam navigation over a distance of about five kilometers. Before the establishment of the railway transhipment of merchandise

149: Reinach--42a G-3 (no date) 1901 AM1 Indochina
Laotians AM8

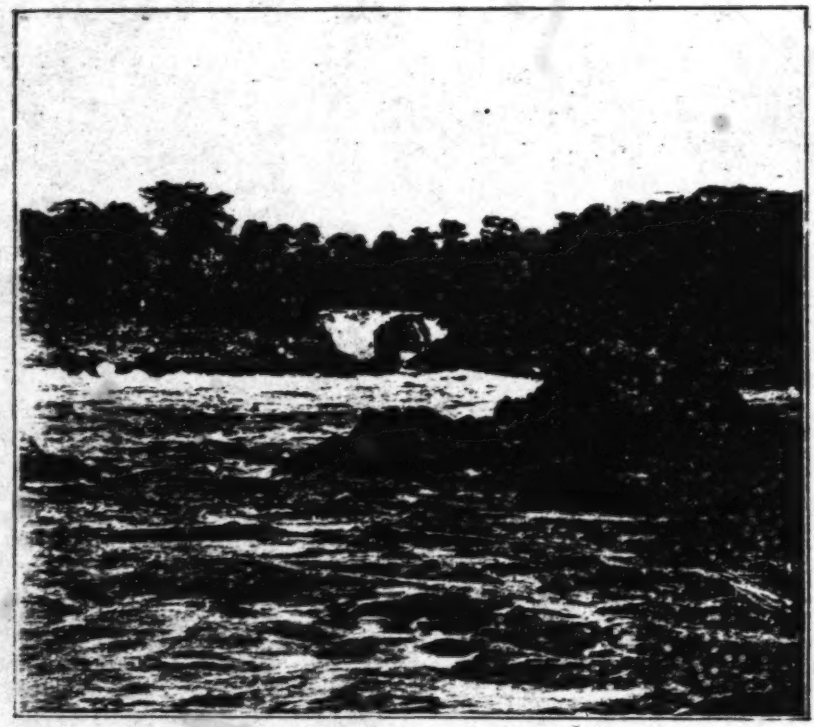

Fig. 16 /p. 56/ The Khone waterfalls.

149: Reinach--42b G-3 (no date) 1901 AM1 Indochina
Laotians AM8

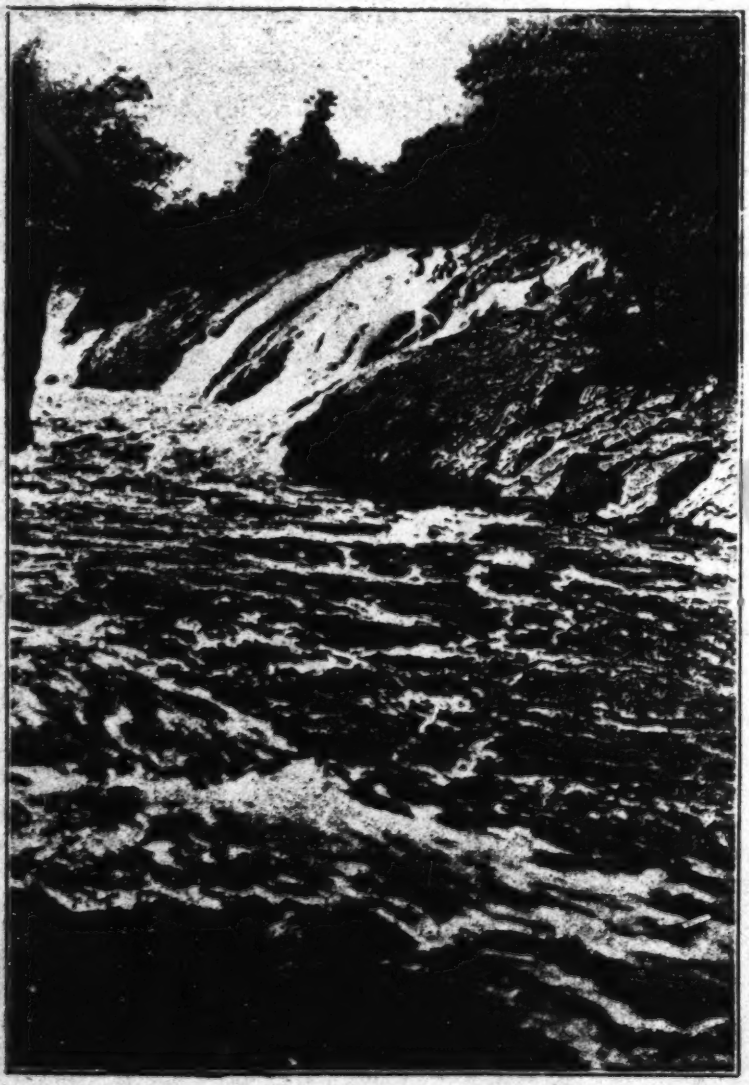

Fig. 17 /p. 57/ The Khone waterfalls.

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from upstream to downstream and vice versa was accomplished by means of oxcarts. In the high water period, however, loaded pirogues ventured to descend the passes. Nowadays the railways offers such advantageous transportation that merchants no longer have any reason to expose their pirogues to the dangers of the Khône passes or to effect a transshipment by means of carts or bearers.

4. The maritime reach from South Khône to the sea.

For a distance of about 200 kilometers, that is to say from South Khône to Kratié (Cambodia), this reach is navigable for steam launches only during the high water period (July to October). It is navigable over a shorter distance, from Khône to Stung-Treng, in all seasons. From Kratié down to the sea steam navigation is possible all year long.

[60] Thus, despite its great rate of flow and the volume of its waters, the Mékong can be negotiated by steam launches only over a small part of its immense course. Here navigation will be interrupted by insurmountable changes in level, there it will be stopped by the rapidity of the current, and elsewhere a lack of water or sand will form an obstacle. In short, the Mékong is a capricious river and has, in addition to a few magnificent reaches where steam navigation is generally easy, rapids which render it dangerous and even impossible.

Under present conditions the Cochinchina River Merchant Fleet [compagnie des Messageries fluviales de Cochinchine] has been able to establish a fairly direct service by steam launch and pirogue from Saigon to Luang-Prabang, over a total distance of 2300 kilometers.

The following table shows the length in kilometers of possible journeys both by steam launch and by pirogue during high and low water periods.

KRATIÉ TO LUANG-PRABANG

Distance in kilometers: 1503.4

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Stage	High Water		Low Water		Observations
	Steam launch	Pirogue	Steam launch	Pirogue	
Kratié to Stung-Treng	135	—	—	135	
Stung-Treng to South Khône	55	—	55	—	
South Khône to North Khône	5	—	5	—	Railway
North Khône to Ban-Dong	28.8	—	—	28.8	
Ban-Dong to Don-Saï	32.9	—	32.9	—	
Don-Saï to Pak-Moun	127.7	—	—	127.7	
Pak-Moun to Savannakhèt	—	210.5	—	210.5	
Savannakhèt to Kabao	30	—	—	30	
Kabao to Vien-Tiane	453	—	430	23*	*Stage from Don-Kassec to Don-Nake
Vien-Tiane to Luang-Prabang	—	425.5	—	425.5	

We may recapitulate the above table without further commentary, for the figures speak for themselves.

[61]

		kilometers		kilometers
From Kratié to Luang-Prabang	High water: steam launches	867.4	(57%)	1503.4
	" pirogues	636	(43%)	
	Low water: steam launches	522.9	(34%)	1503.4
	" pirogues	980.5	(66%)	

No more need be said in order to show that the problem of commercial transport by steamship on the Mékong is far from being solved.

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Fig. 18 /p. 62/ Rapids on the Mekong.

503 predict. It has therefore been decided that, for the moment at least, no more attention should be given to these rapids and that our concern should be restricted to accomplishing the labors necessary to facilitate steam navigation during the low water period in the following reaches:

"1. from Kratié to Stung-Treng and Khône;

"2. between Khône and Pak-Moun;

"3. between Savannakhèt and Sam-Pan-Na."

It might perhaps be understandable that the plan to make these rapids navigable should have been abandoned, if haste were made to build a railway joining the middle Mékong to some port in Annam, when the rapids would become an absolute barrier which we should [138] no longer think of overcoming. But such is not the case, and many long years will still have to pass before the products of the markets of Luang-Prabang and Nong-Khay can reach the Annam coast in any practical way. Moreover, if the work on the navigability of the Mékong continues to go forward at the same slow rate and if we do not take greater advantage of this "moving highway," we shall continue to play into the hands of the Siamese and the market in Bangkok, thanks to the Korat railway, will continue to absorb the Laotian products which should have no other outlets than Saigon, Tourane and Vinh.

d.--DESCRIPTION OF THE DIFFERENT REACHES

1. The Upper Reach

• 133 505 The Mékong enters Laos where it is joined by the Nam-La, at 21° 40' N. latitude, slightly downstream from Xieng-Hong which is on the 22nd parallel. As far as Xieng-Sen it flows in an approximately northeast and southwest direction between two ranges of peaks which constrict its bed and make it a torrent rather than a river. In this narrow corridor it has dug a channel which varies, during the high water period, from 150 to 300 meters in width and which sometimes grows as narrow as 50 meters during the low water period. Its bed is generally encumbered with shoals and [79] rocks, and the whirlpools, eddies, currents and counter-currents make navigation impossible. Thus Lieutenant Commander Mazeran's bold and successful venture deserves mention here, for he succeeded in taking the gunboat La Grandière as far as Xieng-Kok, that is to say nearly to the 21st

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parallel, and 2800 kilometers from the sea.

It was a noteworthy physical effort, but unfortunately a useless one which in no way proves that the Mekong is or ever will be commercially navigable in this region.

Tang-Hô is the point where all ships must stop, no matter what they may be, and not even a Laotian pirogue boatman would venture into the rapids which lie upstream. It may be of interest to quote, in this connection, the opinion of M. Garanger, who was for a long time government commissioner in Vien-Poukha.

"The outlet on the Mékong for the whole region," he says, "is at Tang-Hô at the foot of the famous rapids which are regarded as the terminal point of navigation, since further upstream there are nothing but small pirogues designed for fishing.

"The question of passing the rapids was of too great an interest to the northern part of my commissionership for me not to take some account of the hopes which had been aroused by the successful passage of the La Grandière.

"I was forced to conclude, after following the gunboat's itinerary, that the difficulties remained almost insurmountable. The route followed by the La Grandière is now on dry land in the midst of sand and rocks of a chaotic appearance and some 250 or 300 meters from the rapids. There is water over the bank where passage was found for only two or three months of the year, and it attains an appreciable depth only during the few days which mark the maximum of each rising. The rapids themselves, where all the water is now concentrated, roll on with unheard-of violence in a narrow corridor bordered by two rock walls, and the last attempt to negotiate the passage in a pirogue resulted in the death of one man and the loss of the boat.

"Further upstream, according to the natives, there are still graver obstacles, but they never had any occasion to see them. This information should be accepted only with great reservations, but I myself saw in Xieng-Hong, in 1893, that by using the sandbanks natives were able to cross the great river without ever going further than knee-deep into the water."

Upstream from Xieng-Sèn the Mékong is joined on its right bank by the Nam-Huok, which serves as the frontier between the Anglo-Burmese States and [80] Siam. Slightly downstream from this point it is joined by the Nam-Khôk. From the latter point the river describes a northward curve as far as Xieng-Khong. It then resumes

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its southward course, and just before it reaches the 20th parallel it is joined by its first important left-bank tributary, the Nam-Tha.

The Nam-Tha comes from the northeast and crosses the rich plain of Muong-Luong-Nam-Tha which has been called "the jewel of all Upper Laos," for it is an extremely fertile and well watered region capable of being made into an infinite number of fine rice-fields. The Nam-Tha is navigable in all seasons as far as Sop-Ngim, and as far as Muong-Luong for small pirogues.

The Mékong continues in a sourtherly direction as far as Ban Pak-Kop (19° 45'), then suddenly bends eastward for a distance of 200 or so kilometers as far as Luang-Prabang, as if it were going to flow into the Gulf of Tonkin. In this part of its course it flows between steep hills. It can be navigated by pirogues in all seasons despite the Keng-Li rapids, which require merchandise to be unloaded during the low water period. Upstream from Luang-Prabang it resumes its north and south direction, and towards the 20th parallel its left bank is joined by three large rivers, the Nam-Hou, the Nam-Suong and the Nam-Khan.

In view of the length of its courses and the volume of its waters, the Nam-Hou may be regarded, as we have noted, as one of the branches of the Mékong. Although its mouth is narrow, it soon widens out and takes on the appearance of a great river as far as Muong-Ngoi. At this point it becomes narrow again, only to widen once more until its junction with the Nam-Ngoua. The Nam-Hou could doubtless be negotiated by steam launches during the high water period as far as Muong-Koua (about 150 kilometers from Luang-Prabang), the market where the produce of the region is concentrated. It is navigable in all seasons for pirogues as far as Muong-Houa. From Muong-Houa to Muong-Hahin and Muong-Hou the Nam-Hou can be negotiated only by extremely narrow rafts going downstream. The great rapids of Keng-Louang, situated a day's journey from Pak-Hou, require the cargoes of pirogues to be completely unloaded during middle and low water periods.

[81] By way of the Nam-Ngoua, its left-bank tributary, and its sub-tributary the Nam-Youn, which are navigable in all seasons for small pirogues, the high plateau of Muong-Theng (Dien-Bien-Phu, province of Van-Bu, Tonkin) can be reached. From that point two land routes connect with the Black River at Muong-Lai (Lai-Chau) and Van-Bu.

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487 A particularity which should be noted is that these two land routes which represent some hundred odd kilometers are the only ones which the traveler can take in order to go from Hanoi to Saigon by way of Luang- [Illustration here] Prabang, that is to say by way of the Red River, the Black River, the tributaries of the Mékong and the great river itself, or in order to cover a total distance of approximately 3200 kilometers. These hundred kilometers of land roads are the only ones which merit the name, since all the rest of the journey is made on navigable waterways in steamships, pirogues and rafts.

505 133 The Nam-Suong and its tributary the Nam-Seng can be negotiated in all seasons by pirogues and rafts. Ban-Pak-Seng, at the junction of the Nam-Suong and the Nam-Seng, is the capital of one of the most prosperous cantons in the province of Luang-Prabang.

A day's journey away from Luang-Prabang the Nam-Suong is blocked by [82] a shelf called the Keng-Luang which necessitates complete portage of merchandise and even of pirogues and rafts at certain seasons.

The Nam-Khan is navigable for pirogues and rafts during the greater part of the year, starting at Muong-You which is the head for the road from Tran-Ninh to Luang-Prabang. It flows into the Mékong in the northern part of this city, one of the suburbs of which it circles.

[361] Luang-Prabang, the capital of the kingdom of the same name, is situated at an altitude of 350 meters above sea level, at 19° 54' 20" N. latitude and 99° 45' E. longitude. From the commercial point of view it is one of the most important centers—if not the most important—in Laos. The city numbers about 10,000 inhabitants and 2000 houses. In Luang-Prabang the river is 350 to 400 meters wide. Just above and below the city it is blocked by sandbanks which leave a channel only 100 meters wide during the low water period, but which is always navigable for pirogues and rafts.

The following table shows the average length of time it takes to travel both up and down the rivers between Luang-Prabang and the posts on this reach.

149: Reinach--58a G-3 (no date) 1901 AM1 Indochina
Laotians AM8

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Fig. 23 /p. 81/ The Mekong at Khong, during the low water period.

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About fifteen kilometers from Luang-Prabang a series of rapids begins which makes navigation as far as Pak-Lay extremely difficult, even in pirogues. The Keng-Kaniok and the Keng-Louang [83] make it necessary to unload merchandise and transport it by land using bearers, while the pirogues pass the rapids empty.

Between Luang-Prabang and Pak-Lay the river is quite deeply cut into hills and rock masses, the sides of which constrict its bed to a width of only fifty meters at several points during the low water period. But as it approaches Pak-Lay (1) it widens out to 700

(1) Pak-Lay is situated at 18° 12' 20" N. latitude and 99° 5' E. longitude.

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or 800 meters.

In this part of the river we should note three tributaries of some importance on its right bank. These are the Nam-Houng, the Nam-Poun and the Nam-Lay, and in their valleys there are many teak trees.

Towards the 18th parallel between Pak-Lay and Xieng-Khan (2)

(2) It is at Ban Houé-Hat, between Pak-Lay and Xieng-Khan, that the Mékong comes closest to Bangkok (470 kilometers as the crow flies).

the Mékong is constricted between rocky headlands. Here it is extremely sinuous, and describes an overall northward bend slightly below the parallel (3). Then in another bend which is broader

(3) There is no tributary worthy of note on the left bank. On the right bank, however, about in the center of the bend and upstream from Xieng-Khan there are the mouths of two water-courses, the Nam-Huong and the Nam-Leui, which water a region of fairly dense population. One particularity to be noted is as follows: the sources of these two rivers are only a few kilometers away and are separated, by rather low ridges, 1) from the Nam-Lom-Sak, the easternmost branch of the Ménam, and 2) from the Klong-Koé-Noï, one of its middle left-bank tributaries.

and less winding, but which turns in the opposite direction, that is

133 505 to say towards the north, the river is joined on its left bank by the Nam-Sang and the Nam-Thon, the valleys of which are rich in gold and catechu (sisièt). Then it finally leaves its steep gorges and reaches Sam-Pan-Na, the entrance to the great middle reach which extends as far as Savannakhèt.

Although it presents numerous navigation difficulties because of its rapids, native boats are nevertheless very active as far as Luang-Prabang by reason of the large flow of trade from this great market towards Bangkok by way of Pak-Lay on the one hand, and by way of Nong-Khay on the other.

[84] 2. The Middle Reach

133 505 At Sam-Pan-Na the Mékong leaves the region bristling with mountains which have restricted its course for good and all, and spreads out at its ease in a fine navigable reach nearly 600 kilometers long.

361 It first passes through Vien-Tiane, the old capital of the kingdom of the same name which included, before 1827, all the Laotian territory on both banks of the Mékong between Luang-Prabang and Cambodia. Today the former state of things has been reestablished, and Vien-Tiane is once again the capital of French Laos. In fact, this point is the navigation terminus of the steam launches of the Cochinchina River Merchant Fleet Company [compagnie des Messageries fluviales de Cochinchine], even though the river is accessible to steamships as far as Kok-Peung, which is about 35 kilometers from Vien-Tiane, that is to say above Sam-Pan-Na. It would be true to add that the company would derive no commercial advantage from sending its launches that far up.

Between Vien-Tiane and Nong-Khay the river describes a sharp southward bend which doubles the 22-kilometer distance between the two points by land.

"Nong-Khay, which was founded after the destruction of Vien-Tiane by the Siamese, has partly inherited the importance of this old city. It is the greatest population center to be found on the banks of the Mékong between Pnom-Penh and Luang-Prabang" (1).

(1) Francis Garnier, op. cit. [Voyage d'exploration en Indo-Chine, 1885.]

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Today Nong-Khay numbers about 10,000 inhabitants and 2000 houses. It is the starting point for the ox-cart caravans which travel to Bangkok by way of Korat carrying all the products of northern Laos.

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From Nong-Khay on the Mékong winds through a plain in a northeast direction. Its banks are densely populated and highly fertile. At Pon-Pissay, on the 18th parallel (2), the river makes

(2) The reader will have noted that the 18th parallel has often been referred to in the foregoing. This stems from the curious fact that, in its meanderings, the great river is theoretically cut seven times by the parallel between Pak-Lay and Saniabouri, that is to say over a distance of 535 kilometers.

another northward bend [85] as far as Keng-Sa-Doc, which is just downstream from Pak-Sane (Patchoum). From this point on the Mékong takes the course which it will keep all the way to the sea, following a line approximately parallel to the Annamitic Chain and to the Gulf of Tonkin.

Somewhat beyond Pon-Pissay the Mékong is joined on its left bank by an important tributary, the Ngûm, a fine river with a peaceful course whose valley is highly populated and gives rise to quite extensive trade. Cinnamon, tobacco and catechu [sisiêt] are its chief products. The Ngûm can be navigated by pirogues and rafts in all seasons as far as Tinh-Kéo, where the river is joined by the Nam-Song, about thirty kilometers from Tourakhom. The gunboat Massie went partway up the river during the high water period. It is said that the Cochinchina River Merchant Fleet Company [compagnie des Messageries fluviales de Cochinchine] intends to begin a steam launch service along the river because of its commercial importance.

After the Ngûm on the left bank of the river come first the Nam-Mang, which is of no great interest, and then the Nam-Nhîep, which might be thought larger than it really is, to judge by its mouth. In fact, its total length is scarcely fifty kilometers, and its valley is sparsely populated. Just downstream from the Nam-Nhîep is the mouth of the Nam-Sane, which flows into the river at Muong-Pak-Sane (Patchoum). This river, which has a very winding course, can be navigated by pirogues and rafts in all seasons as far as Keng-Louang, to the north of Borikan. It can be navigated by steam launches over a distance of about fifty kilometers during the high water period.

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or as far as Muong-Borikan which is about halfway between the Mékong and the Keng-Louang. At Pak-Sane a road comes from the right bank and leads to Tran-Ninh by way of Borikan.

Downstream from Pak-Sane there is a series of small rapids which can be negotiated in all seasons. One of these is the Keng-Sa-Doc. Below this point the Mékong is joined by an important left-bank tributary, the Nam-Ka-Dinh or Nam-Teûn. Captain Gosselin describes the latter as follows (1):

(1) Captain Gosselin, op. cit. [Le Laos et le Protectorat français, 1900.]

[86] "The Nam-Ka-Dinh, or Nam-Teûn, has its origin in the center of the muong of Cam-Mon, on a very high and irregular plateau containing the watershed between the basins of the Mékong and of the China Sea. This torrential river, which cuts the plateau of Na-Kaï and receives all its waters, is unusual in that it has navigable tributaries while it itself is not accessible to navigation over the greater part of its course.

"This peculiarity can easily be understood from a glance at the map, where one may note the enormous difference in altitude which its course shows over a distance less than sixty kilometers, immediately downstream from the point where its tributary joins it."

It is possible to travel up the Nam-Ka-Dinh for a two days' journey, as far as the rapids of Keng-Bi.

Throughout this whole reach, as far as Ban Ta-Sa-Kou (right bank) and Hueûn-Hin (left bank), the Mékong retains the appearance of a peaceful river flowing between low banks which are now sandy, and now covered with abundant vegetation. Its width varies between 1200 and 1500 meters, and its waters are deep enough to make steam navigation possible almost all year long. However, the first rapids or Keng-Kassek, which are situated just above Saniabouri, are an obligatory transshipment point during the dry season, although this obstacle does not exist in the period of high waters. After Saniabouri the river passes between Outhène, a quite important market on the right bank, and Pak-Hin-Boun, the capital of a province on the left bank (Cammon).

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The Nam-Hin-Boun, a left-bank tributary, comes from the plateau of Na-Kaï. This river is unusual in that it flows into a tunnel

under the rocks, where it loses itself in an immense grotto. It can be navigated by pirogues in all seasons from Keng-Kiêt on. 505 133

The large island of Don-Don is found between Pak-Hin-Boun and Lakhône.

Lakhone is an important center on the right bank located opposite Tha-Khèk, which is the nearest point to the Annam coast on the whole Mékong (1). [361]

(1) From Tha-Khèk to the mouth of the Cua-Nhuong (Hatinh) is reckoned 180 kilometers as the crow flies.

Just below the 17th parallel is found Muong-Panom, the holy city [87] [Illustration] [88] [Blank page] [89] of Laos and a celebrated spot of pilgrimage, by reason a That (1) which is said to contain relics [778]

(1) A that is a kind of stele or four-sided pyramid.

of Buddha. Opposite Panom, on the left bank, the Sé-Bang-Fai flows into the Mékong.

The Sé-Bang-Fai comes from the Annamitic Chain. It has a sinuous and extremely long course, but cannot be navigated in any season except by pirogues as far as Pou-Houa, that is to say for a distance of about eighty kilometers.

Below its mouth, and thirty kilometers upstream from Savannakhêt, is the Keng-Kabao. The latter deserves mention here, for during the low water period it forms an insurmountable obstacle for steam launches, which never go below this point from November to July.

Difficulties in navigation do not begin until after Hueûn-Hin, and the steam launches of the River Merchant Fleet Company [compagnie des Messageries fluviales] could reach that point during the high water period if there were any commercial advantage to be gained by so doing.

A series of rapids stretches over a length of about 160 kilometers between Hueûn-Hin and Pak-Moun. These are known as the "rapids of Kemmarat" because of the large muong (2) on the right bank which [631]

(2) Muong = province; also means capital of a province.

is located along this part of the river. They are a succession of rapids

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arranged in tiers, which the Mékong descends at speeds which have been found to be as high as eight or nine miles per hour during the high water period. The extremely violent current encounters many rocks and forms whirlpools and eddies which are extremely dangerous to navigation. The pilots and pirogue boatmen must have a great deal of composure and skill in order to direct their great rafts along the upper river through the lashing waves and to prevent them from foundering on the reefs towards which the rapidity of this enormous mass of water impels them.

Francis Garnier speaks as follows of these rapids:

"During the low water period the river here has the appearance of an immense dried-out torrent which has left vast banks of sandstone bare all along its course. An irregular channel [90] winds through the middle of its rocky bed. It is sometimes less than sixty meters wide, while its depth sometimes exceeds a hundred meters at a few points where the current is slow-moving. Each narrowing of the channel produces a rapids or Keng. The latter are the only hazards in this difficult kind of navigation, and each of them has been given a special name by the natives" (1).

(1) Francis Garnier, op. cit. [Voyage d'exploration en Indo-Chine, 1885.]

The rapids which are the most difficult to negotiate and where the greatest number of pirogue accidents occur are, going downriver, the Keng-Mouang and the Keng-Sa above Kemmarat, and below it the Keng-Ngao-Fa-Khop, the Keng-Ka-Niên, the Keng-Kong-Louong (at about 15° 41' N. latitude), the Keng-Nam-Phong, the Keng-Ya-Peut and the Keng-Tha-Kièn. During the high water period the steam launches from the following reach could, if the need should arise, go up as far as Tha-Kièn just below the rapids. This point is of some importance, for it is there that the most direct road between Oubône and Kham-Thong-Niaï and Saravane intersects the river, and Tha-Kièn is less than twenty kilometers from Kham-Thong, that is to say from the Sédone.

Before Pak-Moun the direction of the Mékong, which ever since the mouth of the Nam-Ka-Dinh had been approximately north-northwest and south-southeast, suddenly changes and a spur of Pou-Kang-Huon forces it to curve sharply to the west for a few kilometers,

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as far as the mouth of the Moun.

In this region of rapids the Mékong has only one major tributary, the Sé-Bang-Hièn, which flows into the river opposite Kemmarat.

The Sé-Bang-Hièn (about 250 kilometers in length) derives its importance from the fact that its course and that of its tributary the Sé-Tchépon open a road from Annam to Laos in the middle reach. The Sé-Tchépon is, in fact, navigable from Lao-Bao (Aï-Lao) on during the high water period. Since the latter point is only about 50 kilometers from Maï-Lan, where the river of Quang-Tri is also navigable, it will readily be understood that in 1893, or even 1894, when it was essential at all cost and as quickly as possible to reach the great reach of [91] Vien-Tiane and there fly the French flag on a steam launch, someone should have thought of taking a demountable launch from the Annam coast to the middle basin of the Mékong by way of the depression of Aï-Lao. The plan could not be attempted, until the high water period of 1895.

M. Mercié, a ship's ensign, succeeded in crossing the Aï-Lao gap at an altitude of no less than 410 meters, with his launch taken apart and carried by bearers. When put together and set afloat again on the Tchépon the Fourmi was able to reach the Sé-Bang-Hièn and to negotiate four of its rapids. But it struck bottom in the fifth one, the Pak-Sé-Metch, and was broken up by the rocks just at the moment when it was about to enter the lower Sé-Bang-Hièn, that is to say in a part of its course where the river had only a few unimportant shelves which are covered, in the right season, by more than ten meters of water.

Even supposing that the attempt could have succeeded, the useful and practical advantage to be gained from the venture at the time is not too clear, since the Massie and the La Grandière had already passed the Kemmarat rapids and were in the reach of Vien-Tiane (1),

(1) The La Grandière had even reached Luang-Prabang on September 1, 1895.

which was the first goal to be attained. Moreover, because of the launch's light tonnage and low engine power, even if ship's ensign Mercié's undertaking had succeeded it would not have proved beyond all question of a doubt that the Sé-Bang-Hièn and the Sé-Tchépon were commercially navigable for launches of a practical tonnage.

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Finally, at the junction of the Sé-Bang-Hièn with the great river the Fourmi would have found itself confronted by other and almost insurmountable obstacles before it could gain the navigable reach, such as the Keng-Sa and the Keng-Mouang. We must nevertheless pay homage to the real efforts which were accomplished in a completely disinterested undertaking by this young and daring naval officer.

The following are the average lengths of journeys by river from Vien-Tiane to the nearby posts on this reach:

3. The Inner Reach

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After being joined by the Moun, the largest tributary on its right bank, the Mékong turns back eastward. As it leaves the narrow gorge of Pak-Moun where its course narrows to as little as 200 meters in width between sheer cliffs, it resumes a general north-northwest and south-southeast direction and spreads out over rich plains as far as the mouth of the Sédone.

Korat (1), the largest market in Siamese Laos, also belongs to the

(1) The Moun passes about 25 kilometers to the southeast of Korat.

Mékong basin through the Ta-Krong. The importance of this center is well-known, and today it is directly connected with Bangkok by a railway. Oubône (2), the other market town which is the storehouse

(2) Korat and Oubône are the seats of two French consulates.

of Lower Laos for Korat and Bangkok, as Nong-Khay is the storehouse of Upper Laos, is situated on the banks of the Moun about 300 kilometers from Korat, and only sixty from the Mékong. Communication between Korat and Oubône is achieved mainly by land, by means of ox-carts. We have seen in the foregoing that [93] steam navigation had been attempted on the Moun during the high water period as early as 1891, and that the Siamese were then planning to send their steamships out on the Mékong in the hope of getting there ahead of us. The launches provide a highly irregular service between Oubône and Tha-Phan-Sang, which is about 25 kilometers downstream from Korat. The trip takes from eight to ten days going upriver, and four to five coming down.

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In its lower course, that is to say between Oubône and Pak-Moun, the Moun is barred near its mouth by shelves which make navigation extremely difficult, even for pirogues, during part of the year. The Chinese merchants of Oubône, however, who go by pirogue to Bassac or out on the Sédone, go up and down the Moun in all seasons. Because of the particular service for which they are used, their pirogues are known by the special name of Hua-Moun, or pirogues of the Moun (1).

(1) See table, Chapter VIII.

of the Moun (1).

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(1) See table, Chapter VIII.

The most difficult rapid to negotiate is the Keng-Tanah, situated only three kilometers from Pak-Moun. During the low water period it is necessary to unload them completely and transport them by hand across dry land over extremely rough sandstone rocks. It has been negotiated during the high water period by the single-wheeler the Haiphong, and since the current beyond the rapids is weak and the width sufficient (300 meters), steam navigation is possible as far as Oubône for perhaps two or three months.

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Francis Garnier describes this region as follows (2):

(2) Francis Garnier, op. cit. [Voyage d'exploration en Indo-Chine, 1885.]

"From Pi-Moun on the river is once more unobstructed. A very weak current, straight banks and a uniform width give it, in certain spots, the appearance of a canal dug by man."

At Pak-Sédone the Mékong is joined on its left bank by another important tributary, the Sédone. This river, which is about 200 kilometers in length, rounds the northern part of the plateau of the Bolovens. All the roads which descend from this mountain mass end in its valley, and all the products of the region leave it by way of the Sédone. Cardamom, which is the most important of these, is [94] an item much dealt in at the temporary market of Champi. The latter is the terminus of the convoys which come down from the plateau, and from this point on merchandise goes by river to Bassac or Oubône.

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The market of Champi had to be established fairly near the mouth of the Sédone, for just upriver and less than thirty kilometers from Pak-Sédone the river is barred by insurmountable waterfalls [Illustration here] fifteen meters in height. From the point of view of navigation the Sédone is therefore divided into two sections: the part situated above the falls and the part situated below.

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To the north of the falls the Sédone has a reach some thirty kilometers in length which can be navigated in all seasons by pirogues

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as far as Muong-Khong (1), the point where the roads from Ban-Mouang

(1) During the high water period the Sédone can even be navigated as far as Smia by light pirogues.

to Saravane and from Ban-Mouang to Song-Khone fork. Some pirogues go directly from Kham-Thong-Niaï to Bassac, and in this case [95] the cargo is completely unloaded above the falls and the pirogues are carried overland across steep rocky slopes.

Below the falls the river is accessible to steam launches during the high water period. Before the establishment of steamship service by the Cochinchina River Merchant Fleet Company [compagnie des Messageries fluviales de Cochinchine], the single-wheeler Haïphong provided a regular weekly service for dispatches, travelers and merchandise as far as Champi and Keng-Kok. This lower part of the river's course can be navigated by pirogues in all seasons, but during the low water period the many shelves make navigation extremely difficult.

From the Sédone on, and as far as Bassac, the Mékong is hemmed in by the mountains of Bassac which tower steeply over its right bank and reduce its width to about 500 meters. Francis Garnier characterizes as follows the difference between this gorge and the broad plains which border the river downstream from Bassac (1):

(1) Francis Garnier, op. cit. [Voyage d'exploration en Indo-Chine, 1885.]

"The character of the landscape changes in sudden fashion. Instead of the smiling, uniform plains which the sparkling waters slowly traversed and where they formed hundreds of islands, and instead of the almost submerged banks hidden by long lines of palm trees and houses, there are sheer banks where rocks crop up everywhere and high undulations covered with forests which hem in the rapid black water on all sides."

The river valley then widens out again, and at Bassac itself reaches a width of nearly two kilometers. Bassac is a point of transit where the produce of the region comes to be taken on either for Pnom-Penh or for Oubône. Opposite this center is the large, well-cultivated island of Don-Dèng. From Bassac to Khong, that is to say over a distance of about 100 kilometers, the Mékong flows

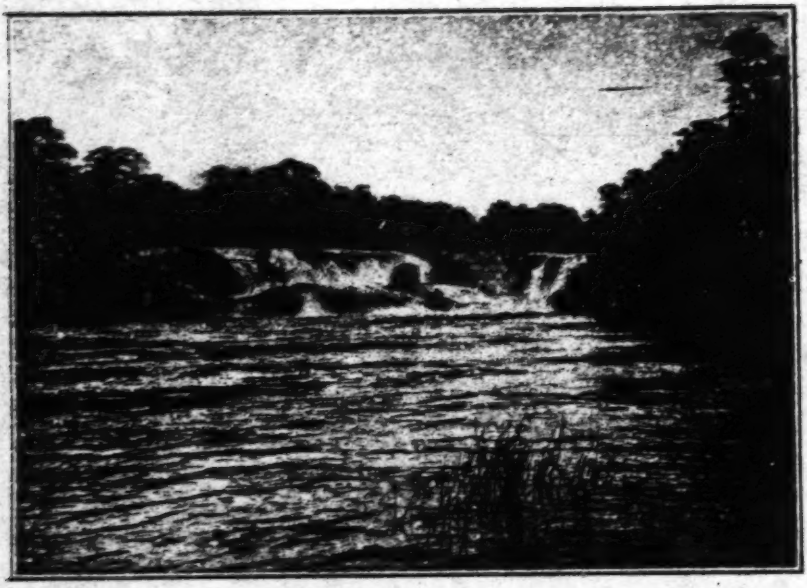

Fig. 25 /p. 94/ The waterfalls on the Sedone.

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in an almost exactly north and south direction through rich and extremely fertile plains where villages succeed one another almost without interruption. Halfway between Bassac and Khong there is another large island, called Don-Sat, which like Don-Dèng is highly populated and well-cultivated. Upstream from the island of Khong the river becomes much wider (eight to ten kilometers) and contains an important [96] group of islands which, by reason of their number, are known as Si-Pan-Don (4000 islands). The island of Khong is by far the most important. It is twenty kilometers long, seven wide, contains several fine villages and has a total population of 10,000 (1).

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(1) In all Laos, this is the point where the population density is greatest with respect to the area (1500 inhabitants per 100 square kilometers).

[16]

On this island is located the city of Khong, the former capital of Lower Laos. [Illustration here]

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Slightly below the 14th parallel is found the island of Khône, famed for its waterfalls which form an absolute obstacle to navigation. Francis Garnier has given us a detailed description of the falls, which he calls cataracts. A few lines of his description are given below (2):

(2) Francis Garnier, op. cit. [Voyage d'exploration en Indo-Chine, 1885.]

"The two largest channels and the most beautiful cataracts are found on the outermost arms of the river, the Salaphe branch and the Paphèng branch. There one may see waterfalls more than fifteen meters in vertical height and which [97] sometimes reach a width of one kilometer. The broken line of cataracts has a total extent of twelve or thirteen kilometers. Upstream the river narrows momentarily until it occupies not more than half this extent, then it spreads out again over the immense plateau of rocks which precedes the falls, losing itself in the midst of numberless islands and embracing between its two banks a space of nearly five leagues."

We have already seen that a railway was established from north to south across the island of Khône to serve as a link between the reaches of Kratié and Bassac. [Illustration here]

The reach of Bassac can be navigated by steam launches during

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the high water period from North Khône to Pak-Moun, that is to say over a distance of nearly 200 kilometers. When the waters fall the navigable extent is reduced, and at low water only a limited service of about thirty kilometers is possible, from Ban-Dong to the southern point of Don-Sai. All the rest of the journey must be made by pirogue, for these small boats can circulate quite easily in this reach in all seasons. Rafts are used only going downriver.

The average length of journeys by river on this reach between Bassac and nearby points is as follows:

4. The Maritime Reach

505 133 Below Khône the Mékong is encumbered by islands, islets and shelves which are more or less difficult to negotiate. During the high water period the river covers most of these hazards. Only the crests of the trees are left above water, and one navigates in a veritable submerged forest which reminds one of an inundation.

361 438 Stung-Treng is an important center, especially by reason of its site, for the city is located at the junction of the Mékong and the Sé-Khong, somewhat below the point where the latter joins the Sésane, which is itself swelled near its mouth by the Ton-Lé-Srépok. The produce of the region of Attopeu naturally finds its way to Stung-Treng, for it is the commercial intermediary between this region and Cambodia.

505 133 At Thboung-Kla, thirty kilometers below Stung-Treng, the Mékong enters Cambodian territory. Then begins a long series of rapids which impede its course and make it difficult [99] [Illustration] [100] [Blank page] [101] to negotiate, but which do not constitute an insurmountable obstacle for steam launches which have sufficient speed. The first important post in Cambodia is at Kratié, and steamships can go up as far as this point in all seasons.

The Sékhong, the Sésane and the Srépok form a basin which is noteworthy for its extent, being equal in area to all of Cochinchina. Unfortunately, the population density and importance of trade in the basin are not in proportion to so considerable an area. The valleys are sparsely populated and traffic there is, in consequence, quite limited. Finally, these watercourses are difficult to negotiate.

The Sékhong is a river whose course stretches over about 400 kilometers. Its sources lie near the 16th parallel, some hundred kilometers to the southwest of Hué, in the orographic nucleus of the Annamitic Chain which also gives rise to one of its large tributaries, the Dak-Poyo.

The upper course of the Sékhong bears the name of Dak-Mout. This river crosses an extremely rough region where towering rocks hem in its torrential bed. Beyond Koum-Kang the valley of the Sékhong widens out and small pirogues can navigate there.

At Muong-Mai, that is to say somewhat below the 15th parallel, the Sékhong is joined by the Sé-Kémane, an important tributary which, under the name of the Dak-Poyo, has its origin in the same mountain mass as the Dak-Mout. After it, like the Sékhong, flows past steep

rocks which tower precipitously over its course, the Sé-Kémane widens out as it is joined by the Dak-Bla, the sources of which, like those of its chief tributary the Sé-Souk, are near the Sésane. The Sé-Kémane is hardly navigable for pirogues except from Muong-Kao on. The latter is the most important center in the region and is generally known by the name of Attopeu. Pirogues can ply back and forth between this point and Stung-Treng in all seasons, but the many rapids with which the Sékhong is encumbered, mainly as far as the Sé-Pien, make its course extremely torrential and navigation very difficult. Before it reaches Siempang the Sékhong is joined on its right bank by the Sé-Pien which, like its [102] tributary the Sé-Kampho, comes from the plateau of the Bolovens. When they leave their gorges these two rivers water marvelous plains which are slightly hilly towards the north and which could serve as pasture land for immense flocks. From Siempang on the Sékhong can be navigated by steam launches during the high water period.

Before it reaches the Mékong the Sékhong is joined, less than ten kilometers from its mouth, by its chief tributary the Sésane, which with its 400-kilometer course is of no less importance and interest than the Sékhong itself.

The Sésane comes from a mountain mass which dominates the amphitheater of Cong-Bol just above the 15th parallel. Its deep valley is called Poco by the natives. Like all the upper valleys of the watercourses in this region, it is encumbered with rapids and waterfalls and deeply cut between rock walls. On its left bank the Poco is joined by the Bla, the valley of which is followed for some distance by the road joining Attopeu to Qui-Nhon by way of Kon-Toum. The Sésane then traverses all this gold-bearing region which is still little-known and, so to speak, unexploited to this day. In its valley are found the mining posts of Ban-Phi, Ruhleville and Bolham. It can be navigated by pirogue in all seasons from Kong-Sédam on. The latter point, slightly above Ban-Phi, has a militia post stationed there to provide security for the works of the Attopeu Gold Mining Company [compagnie des Mines d'or d'Attopeu].

Some twenty-five kilometers from its mouth the Sésane is joined by the Ton-Lé-Srépok, a large tributary. This river, also known as the Sé-Bang-Khan, comes from the south, not far from the plateau of Lang-Bian. It passes close by Darlac, the capital of the province of the same name, and through Ban-Don, from which point it is

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133 navigable during part of the year.

The Ia-Drang, whose valley is inhabited by the Djaraï tribe, is one of its principal tributaries. For that matter, the most important Kha tribes are settled in the valleys of the watercourses which have been dealt with in the foregoing. Thus we find the Lové Khas between the Sé-Khong, the Sé-Souk and the Sésane; the Niaheun Khas and a few Alaks in the valley of the Sékhong; the Souk Khas in those of the Sé-Pien, [103] [Illustration] [104] [Blank page] [105] the Sé-Kampho and the lower Sékhong; the Salangs between the Sésane and the Sé-Souk; the Bahnars and the Rognaos in those of the Bla and the other left-bank tributaries of the Poco; the Penongs in the deep valley of the Srépok; the Djaraïs in the middle valley of the Sésane and in that of the Ia-Drang; and the Braos and the Tiam-Poueun in the lower Sésane. Those [Illustration here] of the Kha tribes which have been pacified work the gold-bearing alluvia of these rivers and pay their taxes with the gold dust which they extract.

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Upriver from Stung-Treng and as far as the waterfalls the Mékong can be navigated at low water by steam launches. At high water the large steamers of the Cochinchina River Merchant Fleet [Messageries fluviales de Cochinchine] which provide service between Saigon and Pnom-Penh can go up as far as Khône. Below Stung-Treng and as far as Kratié the river can be navigated only by pirogues at low water. The following table [106] shows the average length of journeys by river between Stung-Treng and nearby points on this reach:

Fig. 29 /p. 103/ The Khone channel at low water.

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4. HYGIENE

The choice of dwelling sites is of prime importance from the point of view of hygiene. Insofar as necessities permit, Europeans in Laos should seek to satisfy the following conditions:

1. Avoid building in regions which are low, hemmed in, formed of damp alluvia or near swamps or stagnant ponds.

2. Also avoid living on the banks of small watercourses and choose instead, insofar as possible, the larger rivers, especially near the point where they join a sea-going river or on the banks of the sea-going river itself (2).

(2) We have seen in Chapter II that the Mekong is the only river in Laos which flows into the sea.

3. Build houses on an eminence, no matter how small, and preferably on a rock foundation or on sand or on alluvia which are sandy and permeable to water.

4. Houses may be of brick or quarry-stone. They may be roofed [116] with tiles, wooden shingles, bamboo lath or ordinary thatch, depending on the local resources. They must be raised above the ground (at least 1.5 meters), and air must be able to circulate underneath.

5. However, a house made of wood or of a double thickness of bamboo lath can be as healthy as a brick house if it is carefully built.

6. Houses should be large, well ventilated and surrounded by [Illustration here] broad verandas provided with awnings made of strips of rattan. There should at least be verandas on the south and west.

7. Floors must be such that they can be washed with running water, while mats and rugs must be kept to a strict minimum and be easy to move. The best procedure is to use a colored plaster or an encaustic and apply it to the floor of the rooms and verandas and to the bottoms of walls and partitions half a meter up from the floor.

8. Furniture must be light and easy to move, clean and even wash. Bent wood, in the Thonet style, and rattan fulfill these two conditions perfectly.

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/117/ 9. Avoid hangings and draperies insofar as possible. Have only folding doors and windows with two interchangeable sets of panels for each (glass for winter and shutters for the hot season).